Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims

1. (Withdrawn) A blue organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a first mixed region comprising the hole transporting material and a blue light emitting material on the hole transporting region;

a light emitting region comprising the blue light emitting material on the first mixed region;

a second mixed region comprising the blue light emitting material and an electron transporting material on the light emitting region; and

an electron transporting region comprising the electron transporting material on the second mixed region.

2. (Currently Amended) A blue organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a first mixed region comprising the hole transporting material and a host material on the hole transporting region;

a light emitting region comprising a blue light emitting material and the host material added to ~~which a~~ the blue light emitting material ~~is added,~~ on the first mixed region;

a second mixed region comprising the host material and an electron transporting material on the light emitting region; and

an electron transporting region comprising the electron transporting material on the second mixed region;

wherein the light emitting region does not include the hole transporting material and the electron transporting material.

3. (Withdrawn) A white organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a first mixed region comprising the hole transporting material and a first light emitting material on the hole transporting region;

a region comprising the first light emitting material on the first mixed region;

a second mixed region comprising the first light emitting material and an electron transporting material on the light emitting region;

an electron transporting region comprising the electron transporting material on the second mixed region; and

a second light emitting material,

wherein the second light emitting material emits light with a longer wavelength than that of light emitted from the first light emitting material.

4. (Withdrawn) A white organic light emitting device according to claim 3, wherein the second light emitting material is included in a part of the region comprising the first light emitting material.

5. (Withdrawn) A white organic light emitting device according to claim 3, wherein the second light emitting material is included in one of the first mixed region and the second mixed region.

6. (Withdrawn) A white organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a first mixed region comprising the hole transporting material and a first light emitting material on the hole transporting region;

a region comprising the first light emitting material on the first mixed region;

a second mixed region comprising the first light emitting material and an electron transporting material on the light emitting region;

an electron transporting region comprising the electron transporting material on the second mixed region;

a second light emitting material; and

a third light emitting material,

wherein the second light emitting material emits light with a longer wavelength than that of light emitted from the first light emitting material, and

wherein the third light emitting material emits light with a longer wavelength than that of light emitted from the second light emitting material.

7. (Withdrawn) A white organic light emitting device according to claim 6, wherein the second light emitting material is included in the first mixed region whereas the third light emitting material is included in the second mixed region.

8. (Withdrawn) A white organic light emitting device according to claim 6, wherein the second light emitting material is included in the second mixed region whereas the third light emitting material is included in the first mixed region.

9. (Withdrawn) A blue organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a mixed region comprising the hole transporting material and an electron transporting material on the hole transporting region; and

an electron transporting region comprising the electron transporting material on the mixed region,

wherein one of the hole transporting material and the electron transporting material is a blue light emitting material.

10. (Withdrawn) A blue organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a mixed region comprising the hole transporting material and an electron transporting material on the hole transporting region; and

an electron transporting region comprising the electron transporting material on the mixed region,

wherein a blue light emitting material is added to the mixed region.

11. (Withdrawn) A white organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a mixed region comprising the hole transporting material and an electron transporting material on the hole transporting region;

an electron transporting region comprising the electron transporting material on the mixed region; and

a dopant,

wherein one of the hole transporting material and the electron transporting material is a blue light emitting material, and

wherein the dopant emits light with a longer wavelength than that of light emitted from the blue light emitting material.

12. (Withdrawn) A white organic light emitting device according to claim 11, wherein the dopant is included in a part of the blue light emitting material.

13. (Withdrawn) A white organic light emitting device according to claim 11, wherein the dopant is included in the mixed region.

14. (Withdrawn) A white organic light emitting, device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a mixed region comprising the hole transporting material and an electron transporting material on the hole transporting region;

an electron transporting region comprising the electron transporting material on the mixed region;

a first dopant; and

a second dopant,

wherein one of the hole transporting material and the electron transporting material is a blue light emitting material,

wherein the first dopant emits light with a longer wavelength than that of light emitted from the blue light emitting material, and

wherein the second dopant emits light with a longer wavelength than that of the first dopant.

15. (Withdrawn) A white organic light emitting device according to claim 14, wherein the first dopant is included in the hole transporting region and the second dopant is included in the electron transporting region.

16. (Withdrawn) A white organic light emitting device according to claim 14, wherein the first dopant is included in the electron transporting region and the second dopant is included in the hole transporting region.

17. (Withdrawn) A full color display device comprising:

a blue organic light emitting device according to claim 1; and

a member comprising a fluorescent material that is capable of absorbing blue light emitted from the blue organic light emitting device and emitting green light or red light.

18. (Original) A full color display device comprising:

a blue organic light emitting device according to claim 2; and

a member comprising a fluorescent material that is capable of absorbing blue light emitted from the blue organic light emitting device and emitting green light or red light.

19. (Withdrawn) A full color display device comprising:

a blue organic light emitting device according to claim 9; and

a member comprising a fluorescent material that is capable of absorbing blue light emitted from the blue organic light emitting device and emitting green light or red light.

20. (Withdrawn) A full color display device comprising:

a blue organic light emitting device according to claim 10; and

a member comprising a fluorescent material that is capable of absorbing blue light emitted from the blue organic light emitting device and emitting green light or red light.

21. (Withdrawn) A full color display device comprising:

a white organic light emitting device according to claim 3; and

a color filter.

22. (Withdrawn) A full color display device comprising:

a white organic light emitting device according to claim 6; and

a color filter.

23. (Withdrawn) A full color display device comprising:

a white organic light emitting device according to claim 11; and

a color filter.

24. (Withdrawn) A full color display device comprising:

a white organic light emitting device according to claim 14; and

a color filter.

25. (Withdrawn) An full color display device according to claim 17, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

26. (Original) An full color display device according to claim 18, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

27. (Withdrawn) An full color display device according to claim 19, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

28. (Withdrawn) An full color display device according to claim 20, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

29. (Withdrawn) An full color display device according to claim 21, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

30. (Withdrawn) An full color display device according to claim 22, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

31. (Withdrawn) An full color display device according to claim 23, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

32. (Withdrawn) An full color display device according to claim 24, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

33. (Withdrawn) A full color display device comprising a blue organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a first mixed region comprising the hole transporting material and a blue light emitting material on the hole transporting region;

a light emitting region comprising the blue light emitting material on the first mixed region;

a second mixed region comprising the blue light emitting material and an electron transporting material on the light emitting region;

an electron transporting region comprising the electron transporting material on the second mixed region; and

a member comprising a fluorescent material that is capable of absorbing blue light emitted from the blue organic light emitting device and emitting green light or red light.

34. (Currently Amended) A full color display device comprising a blue organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a first mixed region comprising the hole transporting material and a host material on the hole transporting region;

a light emitting region comprising a blue light emitting material and the host material added to ~~which a~~ the blue light emitting material ~~is added,~~ on the first mixed region;

a second mixed region comprising the host material and an electron transporting material on the light emitting region;

an electron transporting region comprising the electron transporting material on the second mixed region; and

a member comprising a fluorescent material that is capable of absorbing blue light emitted from the blue organic light emitting device and emitting green light or red light;

wherein the light emitting region does not include the hole transporting material and the electron transporting material.

35. (Withdrawn) A full color display device comprising a white organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a first mixed region comprising the hole transporting material and a first light emitting material on the hole transporting region;

a region comprising the first light emitting material on the first mixed region;

a second mixed region comprising the first light emitting material and an electron transporting material on the light emitting region;

an electron transporting region comprising the electron transporting material on the second mixed region;

a second light emitting material; and

a color filter,

wherein the second light emitting material emits light with a longer wavelength than that of light emitted from the first light emitting material.

36. (Withdrawn) A full color display device according to claim 35, wherein the second light emitting material is included in a part of the region comprising the first light emitting material.

37. (Withdrawn) A full color display device according to claim 35, wherein the second light emitting material is included in one of the first mixed region and the second mixed region.

38. (Withdrawn) A full color display device comprising a white organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a first mixed region comprising the hole transporting material and a first light emitting material on the hole transporting region;

a region comprising the first light emitting material on the first mixed region;

a second mixed region comprising the first light emitting material and an electron transporting material on the light emitting region;

an electron transporting region comprising the electron transporting material on the second mixed region;

a second light emitting material;

a third light emitting material;

a color filter,

wherein the second light emitting material emits light with a longer wavelength than that of light emitted from the first light emitting material, and

wherein the third light emitting material emits light with a longer wavelength than that of light emitted from the second light emitting material.

39. (Withdrawn) A full color display device according to claim 38, wherein the second light emitting material is included in the first mixed region whereas the third light emitting material is included in the second mixed region.

40. (Withdrawn) A full color display device according to claim 38, wherein the second light emitting material is included in the second mixed region whereas the third light emitting material is included in the fast mixed region.

41. (Withdrawn) A full color display device comprising a blue organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a mixed region comprising the hole transporting material and an electron transporting material on the hole transporting region;

an electron transporting region comprising the electron transporting material on the mixed region; and

a member comprising a fluorescent material that is capable of absorbing blue light emitted from the blue organic light emitting device and emitting green light or red light,

wherein one of the hole transporting material and the electron transporting material is a blue light emitting material.

42. (Withdrawn) A full color display device comprising a blue organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a mixed region comprising the hole transporting material and an electron transporting material on the hole transporting region;

an electron transporting region comprising the electron transporting material on the mixed region; and

a member comprising a fluorescent material that is capable of absorbing blue light emitted from the blue organic light emitting device and emitting green light or red light,

wherein a blue light emitting material is added to the mixed region.

43. (Withdrawn) A full color display device comprising a white organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a mixed region comprising the hole transporting material and an electron transporting material on the hole transporting region;

an electron transporting region comprising the electron transporting material on the mixed region;

a dopant;

a color filter,

wherein one of the hole transporting material and the electron transporting material is a blue light emitting material, and

wherein the dopant emits light with a longer wavelength than that of light emitted from the blue light emitting material.

44. (Withdrawn) A full color display device according to claim 43, wherein the dopant is included in a part of the blue light emitting material.

45. (Withdrawn) A full color display device according to claim 43, wherein the dopant is included in the mixed region.

46. (Withdrawn) A full color display device comprising a white organic light emitting device comprising an organic compound film interposed between an anode and a cathode, the organic compound film comprising:

a hole transporting region comprising a hole transporting material on the anode;

a mixed region comprising the hole transporting material and an electron transporting material on the hole transporting region;

an electron transporting region comprising the electron transporting material on the mixed region;

a first dopant;

a second dopant;

a color filter,

wherein one of the hole transporting material and the electron transporting material is a blue light emitting material,

wherein the first dopant emits light with a longer wavelength than that of light emitted from the blue light emitting material, and

wherein the second dopant emits light with a longer wavelength than that of the first dopant.

47. (Withdrawn) A full color display device according to claim 46, wherein the first dopant is included in the hole transporting region and the second dopant is included in the electron transporting region.

48. (Withdrawn) A full color display device according to claim 46, wherein the first dopant is included in the electron transporting region and the second dopant is included in the hole transporting region.

49. (Withdrawn) An full color display device according to claim 33, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

50. (Original) An full color display device according to claim 34, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

51. (Withdrawn) An full color display device according to claim 35, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

52. (Withdrawn) An full color display device according to claim 38, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

53. (Withdrawn) An full color display device according to claim 41, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

54. (Withdrawn) An full color display device according to claim 42, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

55. (Withdrawn) An full color display device according to claim 43, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

56. (Withdrawn) An full color display device according to claim 46, the full color device is included in one of the group consisting of a video camera, a digital camera, a portable computer, a personal computer, and a cellular phone.

57. (Previously Presented) The blue organic light emitting device according to claim 2 wherein said light emitting device is an active matrix type display device.

58. (Previously Presented) The blue organic light emitting device according to claim 34 wherein said light emitting device is an active matrix type display device.

59. (New) The blue organic light emitting device according to claim 2,
wherein the blue light emitting material is doped to the host material.

60. (New) The blue organic light emitting device according to claim 2,
wherein the light emitting region is doped with 5 wt% of the blue light emitting material.

61. (New) The blue organic light emitting device according to claim 34,
wherein the blue light emitting material is doped to the host material.

62. (New) The blue organic light emitting device according to claim 34,
wherein the light emitting region is doped with 5 wt% of the blue light emitting material.

REMARKS

Claims 1-62 are pending in the application, with claims 1-3, 6, 9-11, 14, 33-35, 38, 41-43 and 46 being independent. Dependent claims 59-62 have been added, and claims 1, 3-17, 19-25, 27-33, 35-49 and 51-56 have been withdrawn, leaving claims 2, 18, 26, 34, 50 and 57-62 under consideration. Claims 2 and 34 have been amended to more clearly recite that the light emitting region includes a blue light emitting material and a host material added to the blue light emitting material. No new matter has been introduced.

Claims 2 and 18 have been rejected as being anticipated by Fukuyama (U.S. Patent No. 6,831,406). Applicant requests reconsideration and withdrawal of this rejection because Fukuyama does not describe or suggest a light emitting region including a blue light emitting material to which a host material is added.

Rather, Fukuyama, at col. 5, lines 30-55 (the passage cited in the rejection), merely describes an emission layer 14 that includes at least 50 wt % of an organic material, and describes different materials that may be employed as the organic material. Fukuyama nowhere describes or suggests forming the emission layer from a blue light emitting material to which is added a host material that also is included in first and second mixed regions, as recited in claim 2.

Fukuyama, at col. 8, lines 17-24, states that the sub-layer 14c is made from a material capable of blue electroluminescent emission. However, this passage, like the one cited in the rejection, fails to describe or suggest forming the emission layer from a blue light emitting material to which is added a host material that also is included in first and second mixed regions, as recited in claim 2.

Accordingly, for at least these regions, the rejection should be withdrawn.

Claim 34 has been rejected as being anticipated by Fukuyama. Like claim 2, claim 34 recites a light emitting region including a blue light emitting material to which a host material is added. Accordingly, applicant requests reconsideration and withdrawal of this rejection for the reasons discussed above with respect to claim 2.

Claims 26, 50, 57 and 58 have been rejected as being unpatentable over Fukuyama in view of Tang (U.S. Patent No. 6,384,529). Applicant requests reconsideration and withdrawal of this rejection because Tang does not remedy the failure of Fukuyama to describe or suggest the subject matter of the independent claims.

Applicant submits that all of the claims are now in condition for allowance.

The fees in the amount of $320 for a one-month extension of time fee ($120) and the additional claims fee ($200) are being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 06 1050.Please apply any charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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